The Best Partner for Your Success

MITSUBISHI CNC

Changes for the Better
The Best Partner for Your Success

This is the MITSUBISHI CNC business philosophy. All the staffs who are committed to MITSUBISHI CNC business wish to be "the best partner for customers aiming at global and future-oriented development". We will continue our efforts with the aim that our CNCs be great help to the customers.

Optimum Solutions for the Future
As a global CNC provider as well as the best partner, we provide optimum technologies and supports for the users making a step toward the future. MITSUBISHI CNCs create new values in cooperation with the users.

Advanced Technologies for the Next Generation
With the sophisticated technologies we have developed as a total factory automation manufacturer, we attain advanced machining control and contribute to the highest accuracy and productivity of manufacturing worldwide. MITSUBISHI CNCs change machine tools, machining and manufacturing.

Solid Support for Day-to-day Comfort
Providing prompt responses, solid technologies and user-friendly supports, we continuously improve our after-sales service quality for users in the world so that they choose MITSUBISHI CNCs again.

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(Note) The contents of this catalog includes optional specifications. Refer to specification manuals for details.
**Technologies for the Next Generation**

With the sophisticated technologies we have developed as a total factory automation manufacturer, we attain advanced machining control and contribute to the highest accuracy and productivity of manufacturing worldwide.

**MITSUBISHI CNCs change machine tools, machining and manufacturing.**

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### High-quality Machining with Balanced Accuracy and Speed

SSS control ensures high machining stability and quality with virtually no effects resulting from cutting shape or speed. Smooth surfaces can be achieved even when small steps exist in a path, and machining time can be reduced by 5 to 30% relative to conventional systems.

- **SSS control OFF**: Defective machining conditions, defects on surface
- **SSS control ON**: High-quality machining, no defects on surface

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### High-speed and High-accuracy Tapping

A high-speed error-compensation function is used for controlling the spindle and servo, enabling accurate tapping. (Note) This function is available with MDS-D2/DH2, MDS-DM2 (one axis only) and MDS-DJ.

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### Prevention of Interferences in Machine

When a possibility of interference is detected on a machine model, the motor decelerates to a stop before interfering. The part to interfere is displayed in a different color.

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### High-speed and High-accuracy Control

OMR-DD Control (Optimum Machine Response Direct Drive)

- **Servo drive unit**
- **Spindle drive unit**

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### Die/Mold Machining Time Reduced

Complete nano control enables high-speed and high-accuracy machining at a maximum fine-segment feed rate of 168kBPM. (BPM: Block per Minute)

- **M700V Series**
- **M700 Series (Our Conventional)**

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### Spindle drive unit vs. Servo Motor

- Spindle drive unit vs. Servo Motor
- Directly compensates synchronization error

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### Supports

- **Supports and Solutions**

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### Technologies for the Next Generation

- **OMR-DD Control (Optimum Machine Response Direct Drive)**
- **Tool Center Point Control**
- **Path of tool center point**

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### Machine Interference Check

- **3D Machine Interference Check**
- **Rotation center**
- **Path of tool center point**

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### Spindle Drive Unit

- **Rotation center**
- **Path of tool center point**

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### Spindle Motor

- **Rotation center**
- **Path of tool center point**

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### Spindle Speed

- **Without OMR-DD control**
- **With OMR-DD control**

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### Spindle Speed

- **Without OMR-DD control**
- **With OMR-DD control**

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### Feed Rate

- **Feed rate: F1700**, Machining time: 1hr 38min 36sec
- **Feed rate: F1700**, Machining time: 1hr 23min 48sec

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### Machining Program

- **Taper machining**: X : Y = 2:1
- **Machining program**: G1 X2. Y1. F9. 43
Solutions for the Future

Well-developed screen design tools help bring out the uniqueness of CNCs. NC Designer, which helps create original screens easily, enables users to add unique customized screens that meet machine tool characteristics.

Two types of designing methods are available: a programming-free method in which automatic programming is carried out upon laying out switches, buttons and data display frames, etc., and a programming method that enables higher-level processing.

Original Screen Design Environment

- Well-developed screen design tools help bring out the uniqueness of CNCs.
- NC Designer, which helps create original screens easily, enables users to add unique customized screens that meet machine tool characteristics.
- Two types of designing methods are available: a programming-free method in which automatic programming is carried out upon laying out switches, buttons and data display frames, etc., and a programming method that enables higher-level processing.

Energy Savings

Drive units
Application of the power regeneration system which allows energy generated during deceleration to be efficiently used as a power supply. Use of low-loss power devices enables reductions in loss of power.

Spindle motors/Servo motors
Energy loss of spindle motors during high-speed operation has been substantially reduced. Drive current of servo motors has also been reduced by downsizing the motors while increasing the torque.

Mitsubishi Factory Automation Solutions

- Our cultivated Factory Automation technologies and experience contribute to offer the best suited systems for users.
- Our FA solutions support high and low hierarchy components, a network and even applications that control the components and network required for a manufacturing floor.

Manufacturing Support Software

We provide optimal solutions for manufacturing sites by combining various software.

Mitsubishi FA product groups

* iQ Platform, GOT are registered trademarks of Mitsubishi Electric Corporation in Japan and/or other countries.
Support for the Day-to-day Comfort

Providing prompt responses, solid technologies and user-friendly supports, we continuously improve our after-sales service quality for users in the world so that they choose MITSUBISHI CNCs again.

Global Service & Support Network

We provide satisfying after-sales services worldwide, aiming to be your best partner.

After-sales Service

- **Maintenance service**
  Our service centers boasting high-quality customer service system are located in various regions around the world to provide secured and reliable services for the users. We offer wide range of services such as giving prompt and precise advices and suggestions, and on-site repairs, etc.

- **Part supply**
  As each service center keeps maintenance parts in stock, the down time after a failure can be minimized. We are making our efforts to provide utmost services that allow users to use their CNC machine tools more securely.

- **One-year maintenance contract**
  We provide maintenance services after expiration of warranty period in one-year units. Should there be any failure, our engineer in the closest service center will be at your support immediately.

- **Training**
  We provide trainings on both basic and advanced operations using actual machines. Individually tailored training programs and on-site lessons are also available. Please contact us for details.

Displays in 17 Languages

Supports 17 languages.

Supported languages

- Japanese
- English
- German
- Italian
- French
- Spanish
- Chinese (traditional)
- Chinese (simplified)
- Korean
- Portuguese
- Hungarian
- Dutch
- Swedish
- Turkish
- Polish
- Russian
- Czech

High-quality

Our top priority is to provide users with high performance and high-quality products. We are making the best efforts to improve quality and reliability in every process from planning, development, designing and manufacturing through operation after delivery.

Trainings in 17 Languages

We established FA Centers that manage service centers and service satellites in each area to enhance our service quality by providing trainings for engineers and enhancing service parts and repair facilities.
### Product Line

#### Advanced product lines take your machine to the next level

**High-grade Mitsubishi CNC M700V Series, Equipped with Advanced Complete Nano Control**

- The latest RISC-CPU is installed to achieve advanced complete nano control
- High-accuracy machining with complete nano control
- Easy operability that significantly reduces machining setup time

#### Global Standard Mitsubishi CNC M70V Series, Pursuing High Speed and Accuracy

- Enhanced machining accuracy and reduced lead time
- Easy and advanced operation contributing to setup time reduction
- Compact size

#### Simple CNC E70 Series, Offering Easy Operability and High Cost Performance

- Simple operations free operators from burden
- With the latest hardware installed, this CNC realizes high cost performance

#### IQ Platform Compatible CNC C70 Series Incorporated with Mitsubishi’s State-of-the-Art Technologies

- Compatible with the Mitsubishi FA integrated solution, “IQ Platform”
- High-performance CNC integrated with high-speed PLC offers high-speed control to reduce cycle time
- A wide variety of FA products helps construct flexible lines

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### Drive Units

**High-performance Servo/Spindle Drive Units**

- **MDS-D2/DH2 Series**
  - Basic performance: PSI (power saving) 
  - High-speed performance: high-inertia motor with a high-speed spindle

- **Multi-hybrid Drive Units MDS-OM2 Series**
  - Suitable for applications where a high level of performance is required

**All-in-one compact drive units MDS-DJ Series**

- Ultra-compact drive units with built-in power supplies contribute to reducing control panel size
- STO (safe torque off) is now available

**Spindle Motors**

- **Low-inertia Motor HF-KP Series**
  - Suitable for an axle set that requires high-speed positioning
  - Range: 0.2 to 0.75 [kW]
  - Maximum speed: 6,000 [r/min]

- **Linear Servo Motor LM-F Series**
  - High-speed positioning

- **Direct Drive Servo Motor TM-RB Series**
  - High-torque direct-drive combined motor with a high-gain control system provides quick acceleration and positioning, which makes rotation smoother

**Tool Spindle Motor HF-KP/HF-SP Series**

- Taking advantage of the characteristics of a servo motor such as smallness and high-output, this motor serves as a compact and high-output spindle motor which is capable of high-speed rotation (6,000r/min).
- This motor contributes to downsizing of spindle, such as the rotary tool spindle

**IPM Spindle Motor**

- In answer to demands for downsizing and higher efficiency, an IPM motor has been introduced for further energy savings

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*Microsoft Windows is either a trademark or registered trademark of Microsoft Corporation in the United States and/or other countries.*
High-grade Mitsubishi CNC M700V Series, equipped with advanced complete nano control

**Latest RISC-CPU achieves Advanced Complete Nano Control**
- The latest RISC-CPU and high-speed optical servo network are installed, achieving high-speed and high-accuracy control, nano control and 5-axis machining
- Functions can be easily expanded by adding an expansion unit
- Ultra-high-speed PLC engine reduces cycle time

**High-accuracy Machining with Complete Nano Control**
- Combination of “complete nano control” that processes everything from NC operation to servo control processing in nanometers, a state-of-the-art technology “SSS control” and “OMR control” makes it possible to achieve ultra-high-quality machining
- High-speed and high-accuracy machining at 168k blocks per minute is possible

**Easy Operability that Significantly Reduces Machining Setup Time**
- NC screen design has been renewed to strongly support operations from machining setup to monitoring
- The NC screen displays machining program check and machining states visually by using 3D display

**Windows® XPe-based Model Added to the Product Line**
- Since Windows® XPe is installed in M720VW, M730VW and M750VW, they facilitate developing such as MTB’s original CAM function and data managing function that can enhance the operability

**Main Specifications**

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<thead>
<tr>
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<th>M730VW</th>
<th>M750VW</th>
<th>M750VW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specifications</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum number of control axes (NC axes + spindles + PLC axes)</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Maximum number of NC axes (in total for all the part systems)</td>
<td>16</td>
<td>16</td>
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<tr>
<td>Maximum number of spindles</td>
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<tr>
<td>Maximum number of PLC axes</td>
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<td>Maximum number of PLC indexing axes</td>
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<tr>
<td>Maximum number of simultaneous contour control axes</td>
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<td>Maximum number of NC axes per part system</td>
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<tr>
<td>Number of spindles</td>
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</tr>
<tr>
<td>Number of PLC axes</td>
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</tr>
<tr>
<td>Number of PLC indexing axes</td>
<td>Available</td>
<td>Available</td>
<td>Available</td>
</tr>
<tr>
<td>Number of simultaneous contour control axes</td>
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<tr>
<td>Workpiece travel command for the 1st part system</td>
<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
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<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
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<td>Workpiece travel command for the 2nd part system</td>
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<td>Workpiece travel command for the 3rd part system</td>
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<td>Workpiece travel command for the 4th part system</td>
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<td>Workpiece travel command for the 5th part system</td>
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<tr>
<td>Workpiece travel command for the 6th part system</td>
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<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
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<td>Workpiece travel command for the 7th part system</td>
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<td>Workpiece travel command for the 8th part system</td>
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<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
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<td>Workpiece travel command for the 9th part system</td>
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<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
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<td>Workpiece travel command for the 10th part system</td>
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<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
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<tr>
<td>Workpiece travel command for the 11th part system</td>
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<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
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<td>Workpiece travel command for the 12th part system</td>
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<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
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<tr>
<td>Workpiece travel command for the 13th part system</td>
<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
</tr>
<tr>
<td>Workpiece travel command for the 14th part system</td>
<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
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<tr>
<td>Workpiece travel command for the 15th part system</td>
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<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
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<tr>
<td>Workpiece travel command for the 16th part system</td>
<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
<td>10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)</td>
</tr>
</tbody>
</table>

**OMR-FF Control**
- This function is for a machine with a spindle motor to rotate a guide bushing. This function allows the guide bushing spindle motor (G/B spindle) to synchronize with a reference spindle (Reference spindle).
- The position error compensation function reduces the spindle’s vibration due to the workpiece’s torsion, and the motor’s overload.

**Control Axis Superimposition**
- SSS control is now available for the most basic function of five-axis simultaneous interpolation control, tool center point control.
- It compensates uneven paths output from CAM to smoothly joint the tool center points’ paths. In addition, rotary axis pre-filter is available to move the rotary axis smoothly, which achieves high-grade cutting in five-axis simultaneous machining.

**Complete Nano Control**
- All operations from program values to servo commands are done in nanometer units. Interpolation is at the nano-unit level even when program commands are in micrometer units.

**M700V Series** numerical processing performance and PLC processing performance have been significantly improved from those of our conventional M700 Series.

**Machining Program Processing Speed**
- M700V Series: 2,000kBPM (Note 1)
- M720VS: 67.5kBPM (Note 2)

(Note 1) BPM is the number of machining program blocks processed per minute.

(Note 2) M720VS’s machining program processing speed is 67.5kBPM.
Global standard Mitsubishi CNC pursuing high speed and accuracy

**Enhanced Machining Accuracy and Reduced Tact Time**
- The minimum command unit of 0.1μm and minimum internal interpolation unit of 1nm allow highly accurate and smooth machining.
- High-speed error compensation function is incorporated in spindle and servo controls, which enables high-speed and high-accuracy tapping, etc.
- The high-speed PLC engine enhances the operation speed, contributing to cycle time reduction.

**Easy and Advanced Operation Contributing to Setup Time Reduction**
- This CNC is equipped with pop-up screens that prevent operators from being bothered with screen hierarchy, and guiding function that displays guidance on operations, programs and alarms.
- Ethernet interface is installed as standard; thus, program management can be easily realized.
- A compact flash installed in front of the display allows storing of large-capacity NC programs and easy management of maintenance data.
- Simple programming functions NAVI MILL and NAVI LATHE are installed.

**Compact Size Achieved**
- Unit dimensions have been downsized by integrating a display with CNC control part, contributing to downsizing of control panel.
- High visibility TFT color LCD is used. 8.4-type and 10.4-type displays are available.

**Main Specifications**

<table>
<thead>
<tr>
<th>Model Name</th>
<th>Milling System</th>
<th>Lathe System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specifications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Least command increment</td>
<td>0.1μm</td>
<td>1nm</td>
</tr>
<tr>
<td>Least control increment</td>
<td>0.1μm</td>
<td></td>
</tr>
<tr>
<td>Maximum number of NC axes (in total for all the part systems)</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Maximum number of spindles</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Maximum number of PLC axes</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Maximum number of part systems</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Maximum number of simultaneous contour control axes</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Maximum PLC program capacity</td>
<td>2,000kB [5,120m]</td>
<td></td>
</tr>
<tr>
<td>Servo motor controller capacity</td>
<td>2,000kB [5,120m]</td>
<td></td>
</tr>
<tr>
<td>Air pressure</td>
<td>0.15MPa</td>
<td></td>
</tr>
<tr>
<td>Unit dimensions</td>
<td>2,000 steps</td>
<td></td>
</tr>
<tr>
<td></td>
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</tbody>
</table>

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* CompactDail and CT are either trademarks or registered trademarks of SanDisk Corporation in the United States and/or other countries.
E70 Series

Simple CNC Offering Easy Operability and High Cost Performance

Simple operations free operators from burden
- This CNC has the same screen structure as of M700V and M70V Series, allowing easy operations.
- Switching between milling and lathe systems is accomplished simply by changing the parameter.
- Various support tools help reduce initial setup time including the time for developing ladder programs and customized screens.

With the latest hardware installed, this CNC realizes high cost performance
- CNC control part integrated with a display provides compact size and high cost performance.
- Ethernet interface is installed as standard; thus, program management can be easily realized.
- Compatible with analog output, this CNC allows a spindle motor to be driven by an inverter.

Nano Control
- Interpolation calculation accuracy improved
  Even with one-micron-unit commands in the machining program, interpolation is in nanometer units. As the calculation accuracy of a block intersection is improved, lines on the surface is finer.

Memory Card/USB Memory Interface
- A compact flash memory card (CF card) /USB memory interface is located on the front of the display. In using CF card, the card slot can be completely covered by a lid so as to prevent foreign materials from entering (IP67).

Inclined Axis Control (Lathe System)
- Even when the control axes configuring a machine are mounted at an angle other than 90 degrees, this function enables it to be programmed and controlled in the same way as with an orthogonal axis.
- The inclination angle is set using a parameter, and axes are controlled using the movement amounts of the axes which are obtained through conversion and compensation using this angle.

Spindle/C-axis Control
- The spindle’s constant position loop control has eliminated the zero point return time when switching from the spindle to C-axis.

PLC Axis
- Indexing function
  By setting the number of stations required for the application, the drive automatically sets up equal intervals between each station. Positioning of the axis is only possible by commanding the station number.

Main Specifications

- Maximum number of control axes (NC axes + PLC axes + spindle)
- Maximum number of NC axes (in total for all the part systems)
- Maximum number of spindles
- Maximum number of PLC axes
- Maximum number of simultaneous contour control axes
- Number of control axes
- Maximum number of part systems
- Least command increment
- Least control increment
- Maximum program capacity
- Maximum PLC program capacity

Additional specifications including optional specifications are listed.

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Human Machine Interface allowing easier and more visible use

**HMI for Easier and More Visible Use**

- **Screen structure linking to the operation processes**
  Operation processes are divided into three steps, “Monitor,” “Setup” and “Edit,” and necessary information is aggregated into three screens. These screens can be displayed by touching a single button on the keyboard.

- **Pop-up screens**
  Tabs allow the user to select necessary operations from the operation menu, and pop-up screens allow the user to access desired information while the original screen remains displayed. For displays with a touch panel, a keyboard can be displayed on the screen.

- **2-part system display**
  The Monitor screen of the 2nd part system can be displayed together with the 1st part system. Switching screens is not necessary.

- **Menu customization function**
  Menu keys on the bottom of the screen can be freely arranged. Frequently used menu keys can be put together on the first page.

**Operation Support**

- **Manual/Automatic backup function**
  - Batch backup of the NC data into the memory card/USB memory inserted in the front interface of the display is possible. For the built-in hard disk type M700V Series, backup in the hard disk is also possible.
  - Data is automatically backed-up at a certain interval set by the parameter.

- **Program input error warning function**
  - The added 3D solid model check function allows more realistic cutting check.1
  - This function helps an operator to input and check programs. Errors are indicated when a decimal point is omitted.2

**Simple Programming Functions with Simple Machining Menu**

- **NAVI MILL (Machining center system) / NAVI LATHE (Lathe system)**
  - Programs are automatically created for each process when an operator selects machining process and inputs data on screen.
  - A tool path can be graphically drawn for the program check.
  - This function also supports inclined surface machining.

1 Available with M700V Series, M70V TypeA (M System) only.
2 Available with M700V Series only.

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User-friendly Human Machine Interface allowing easier and more visible use.
C70 Series

iQ Platform-compatible CNC, providing the largest effect on TCO reduction

- A CNC structured in building block method on iQ Platform
- Compact and high-speed CNC module “Q173NCCPU” equipped with the multi-axis and multi-part system control
- Ultrahigh-speed connection between Ultrahigh-speed PLC CPU module MELSEC QnUD (H) CPU and CNC CPU
- Variety of modules for power supply, input/output interface, network and measurement are available
- “Mitsubishi Graphic Operation Terminal”, an easily customizable HMI with high performance and multiple functions
- Compatible with MELSOFT, easy-to-use engineering tools with multiple functions

Main Specifications

| Specifications | Model name | Main Specifications | iQ Platform
|----------------|------------|---------------------|----------------
| Number of control axes | Number of control part systems | PLC function |
| Number of basic control axes (NC axes) | Maximum number of spindles | Maximum number of PLC axes |
| Standard number of part systems | Maximum number of part systems | Program capacity[k steps] |
| Number of input/output points | | Maximum number of files to store |

- Model name: C70 Machining center system
- Number of control axes: 3
- Number of control part systems: 16
- PLC function: 16
- Number of basic control axes (NC axes): 7
- Maximum number of spindles: 8
- Maximum number of PLC axes: 8
- Standard number of part systems: 7
- Maximum number of part systems: 84
- Program capacity[k steps]: 4,096
- Number of input/output points: 124

Building Block Type

- Variety of network modules for Mitsubishi PLC MELSEC-Q Series are available.
- Motion controllers and robots are compatible with iQ Platform, enabling system expansion.

Multi-axis, Multi-part System Control

One CNC CPU module up to 7 part systems and 16 axes. Up to two CNC CPU modules can be installed on iQ Platform.

Ultrahigh-speed network between CNC CPUs and PLC CPUs

For data transfer between CNC CPUs and PLC CPUs, we have newly developed a dedicated high-speed bus. Data are transferred at a high-speed cycle (0.88ms) between the high-speed shared memories of each CPU, so each CPU speed can be fully utilized.

Safety Observation Function

This function enables safety signal comparison, speed observation and duplicated emergency stop. This function complies with the European safety standard EN ISO 13849-1 PL d.

New Model Q PLC

Sequence processing time is widely accelerated, including 3.5 times faster basic instruction performance compared to our conventional one. Reduced scan time also reduces the tact time.

GOT 1000 Series Displays

Customized screens can be easily developed with the GOT screen creation tool (GT Designer). It is possible to operate a machine via a touch panel instead of a conventional machine operation panel.

NC Monitor is installed in SVGA and XGA models as standard, which enables setting of each NC data and editing of machining programs, etc.

* MELSEC, iQ Platform, MELSOFT, GOT are registered trademarks of Mitsubishi Electric Corporation in Japan and/or other countries.
**User Support Tools Provide an Improved CNC Environment**

**Rich Development Tools Help Bring out the Uniqueness of CNCs**

**User Support Tools**
- User Support Tools Provide an Improved CNC Environment
- Rich Development Tools Help Bring out the Uniqueness of CNCs

**NC Trainer/NC Trainer plus**
- MITSUBISHI CNC Training Tool
- NC Trainer is an application for operating the screens of MITSUBISHI CNC M700V/M70V/E70 Series and machining programs. This application can be used for learning operating CNC and checking the operations of the machining programs.
- NC Trainer plus can also be used for checking the PLC program and custom screens.

**NC Explorer**
- Data Transfer Tool
- By connecting the NC and host personal computer via Ethernet, data such as machining programs can easily be shared. This tool is free of charge. Please contact us.

**NC Maintainer**
- A software tool for a personal computer to carry out maintenance (such as parameter setting, NC diagnosis and PLC program diagnosis) of MITSUBISHI CNC on customer’s display.

**NC Monitor**
- Remote Monitoring Tool
- An identical NC display screen can be displayed on a personal computer. By connecting a personal computer to the NC unit when necessary, various data can be checked and set using the same HMI as the standard NC screen. Remote Monitor Tool (C70) is free of charge. please contact us.

**NC Designer**
- Screen Design Tool
- By laying out readymade standard parts, you can easily create original screens without programming.
- Using the C language source generation function of NC Design, customized functions can be added by programming in C language. (Dedicated development environment necessary)

**NC Analyzer**
- Servo Adjustment Support Tool
- Parameters can be automatically adjusted by activating the motor using machining programs for adjustment or vibration signals, and measuring/analyzing the machine characteristics.
- This tool is free of charge. Please contact us.

**NC Configuration2**
- Parameter Setup Support Tool
- The NC data file necessary for NC control and machine operation (such as parameters, tool data and common variables) can be edited on a personal computer. Please contact us to purchase a full function version. (A limited function version is also available free of charge.)

**Servo Selection Tool**
- By selecting the machine configuration model and inputting the machine specifications, the optimal servo motor meeting specifications can be selected. Other selection functions which fully support drive system selection are also available. This tool is free of charge. Please contact us.

**Sequence Programming Tool**
- The MELSEC programming tool, offering a wide array of functions and easy use, allows for convenient program design and debugging. Linking with a simulator or other utility allows for the efficient creation of desired programs.

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* MELSEC is a registered trademark of Mitsubishi Electric Corporation in Japan and/or other countries.
PLC | MELSEC-Q Series Universal Model

- Realizing high-speed, large volume data processing to support complicated processing equipment and manufacturing systems.
- Realize high-speed, high-accuracy machine control with various Q Platform compatible controllers and multiple CPUs.
- Easily connect to GOTs and Programming tools using built-in Ethernet port.
- 20 models from 10 k step small capacity to 1000 k step large capacity, are available.
- Seamless communication and flexible integration at any network level.

<table>
<thead>
<tr>
<th>Product Specifications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Program capacity</td>
<td>10k steps to 100k steps</td>
</tr>
<tr>
<td>Internal memory</td>
<td>256 points to 4096 points/B102 points</td>
</tr>
<tr>
<td>Basic instruction speed</td>
<td>120ns to 9.6ns</td>
</tr>
<tr>
<td>External memory</td>
<td>USB4 models equipped, Ethernet, RS-232, memory card</td>
</tr>
<tr>
<td>Power supply</td>
<td>105 - 380V, input power, protecting, simple motor, temperature input, temperature control, network mode</td>
</tr>
<tr>
<td>Module extension style</td>
<td>Building block type</td>
</tr>
<tr>
<td>Network</td>
<td>Ethernet, CC-Link IE controller network, CC-Link IE field network, CC-Link, CC-Link/IE, MELSECCNET/H, SCSI,Ethernet, AnyWire, RS-232, RS-422</td>
</tr>
</tbody>
</table>

HMI | Graphic Operation Terminal GOT1000 Series GT16 Model

- Full-flat face body integrating all the functions required of a HMI.
- All models are equipped with Ethernet, RS-422/485 and RS-232 interfaces enabling a diverse range of communications.
- A multimedia unit and a video/RGB unit (optional) are supported for smooth recording and playback of moving images.
- USB host and device ports are provided as a standard on the front panel. Easily connect to a personal computer for data exchange.
- Large 15MB memory capacity allows you to use optional functions and real parts, etc., without worrying about memory space.

<table>
<thead>
<tr>
<th>Product Specifications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution</td>
<td>15&quot;, 12.1&quot;, 10.4&quot;, 8.4&quot;, 5.7&quot;</td>
</tr>
<tr>
<td>Touch panel adjustment</td>
<td>6 step or 4-step adjustment</td>
</tr>
<tr>
<td>Built-in interface</td>
<td>RS-232, RS-422/485, Ethernet, USB, CF card</td>
</tr>
<tr>
<td>Applicable software</td>
<td>GT Works3</td>
</tr>
<tr>
<td>Input power supply voltage</td>
<td>100 to 240VAC (±10%, ±15%), 24VDC (±20% to ±20%)</td>
</tr>
</tbody>
</table>

Inverter | FREQROL-A700 Series

- High-performance, high-performance inverter
- High-accuracy, high-response speed control using real sensor-less vector control is possible with a general-purpose inverter having no PLG (encoder) (200% torque/0.3 Hz (3.7 Kvar or less)).
- Full-scale vector control is possible when used in combination with a motor with PLG (when using option).
- The built-in noise filter (EMC filter) helps reduce noise generated from the inverter.
- This series supports FPM motor operation. Use auto tuning to operate with the optimum motor characteristics.

<table>
<thead>
<tr>
<th>Product Specifications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inverter capacity</td>
<td>200V class: 0.4kW to 90kW, 400V class: 0.4kW to 50kW</td>
</tr>
<tr>
<td>Control method</td>
<td>FRR, V/F control, vector, torque control, I/O control, axis control, etc.</td>
</tr>
<tr>
<td>Output frequency</td>
<td>0.2 to 400Hz (real sensor-less, vector, upper frequency during vector control is 120Hz)</td>
</tr>
<tr>
<td>PM offline auto tuning</td>
<td>200V class: 0.4kW to 1.5kW (105%3Hz), 2.2kW (100%3Hz)</td>
</tr>
<tr>
<td>Starting torque</td>
<td>200% (0.3Hz, 0.3Hz, 0.5Hz or more)</td>
</tr>
</tbody>
</table>

Contactors and Motor Starters | MS-N Series

- Compact body with full satisfaction
- Lineup from 10A to 800A frames. Available in wide range of applications.
- Conforming to various international specifications as standard.
- Equipped with safe open function contact, applicable to circuits in “machine safety category 4”.
- CAN terminals achieved wiring rationalization and safety improvement.

<table>
<thead>
<tr>
<th>Product Specifications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame</td>
<td>10A to 800A frames</td>
</tr>
<tr>
<td>Applicable standards</td>
<td>Complying with various standards such as IEC, UL, UL508, and GB.</td>
</tr>
<tr>
<td>Standard models</td>
<td>Standard models conforme to the Directive</td>
</tr>
<tr>
<td>A variety of options</td>
<td>Additional auxiliary contacts, coil wrap abator modules, mechanical interlock modules, etc.</td>
</tr>
<tr>
<td>Mounting on DIN rails</td>
<td>Two-shaped moving contacts and proved fixed contacts are employed to enhance contact reliability. 10A to 65A frames can be mounted as standard</td>
</tr>
<tr>
<td>Fingerprint protection</td>
<td>Various kinds of fingerprint protection covers are available</td>
</tr>
</tbody>
</table>

Robot | Mitsubishi's Industrial Robot MELFA F Series RV-4F

- High-speed, high-precision, high-function vertically articulated robot with 4 kg payload capacity
- Advanced motion technology yields high-speed motion.
- Internal routing of cables and air lines improves end-of-arm-tool performance.
- Increased range of axis motion yields maximum utilization of robot’s work envelope.
- Unique offset arm design allows the robot to be deployed in compact spaces.

<table>
<thead>
<tr>
<th>Product Specifications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Degrees of freedom</td>
<td>6</td>
</tr>
<tr>
<td>Type</td>
<td>Vertically articulated</td>
</tr>
<tr>
<td>Installation posture</td>
<td>Floor, ceiling, wall, wall (range of motion for c1 limited)</td>
</tr>
<tr>
<td>Payload capacity</td>
<td>4kg</td>
</tr>
<tr>
<td>Maximum length radius</td>
<td>515mm</td>
</tr>
<tr>
<td>Cycle times (tool weight)</td>
<td>0.36 sec. (1kg)</td>
</tr>
<tr>
<td>Positioning repeatability</td>
<td>±0.020mm</td>
</tr>
<tr>
<td>Protection specifications</td>
<td>IP40 (clean specifications: ISO Class 3, oil mist specifications: IP67)</td>
</tr>
</tbody>
</table>

EDM | Wire EDM MV1200R

- Next-generation Innovations of our best selling Performance Machine.
- Total running cost reduced up to 42%, which is accounted for 90% by filter, ion exchange resin and power consumption.
- Improved productivity by an innovative automatic wire threading.
- Faster machining is realized with improved power-supply performance. (R23. 5μm/RAO. 45μm with 3cuts) (R23. 5μm/RAO. 28μm with 4cuts)

<table>
<thead>
<tr>
<th>Product Specifications</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor</td>
<td>MV12000</td>
</tr>
<tr>
<td>Machining trial [305x2][mm]</td>
<td>400x(15.7)x300x(18.8)x200x(7.7)xYY (OPT-Drive specifications)</td>
</tr>
<tr>
<td>Machining trial [305x2][mm]</td>
<td>400x(15.7)x300x(18.8)x200x(7.7)xYY (OPT-Drive specifications)</td>
</tr>
<tr>
<td>Max. taper angle [°]</td>
<td>15° (maximum 200mm)[7.7°]</td>
</tr>
<tr>
<td>Max. spindle rotations [rpm]</td>
<td>810 (700)[1401.6]</td>
</tr>
<tr>
<td>Wire diameter [mm]</td>
<td>0.1 (0.040) to 0.6 (0.024&quot;)</td>
</tr>
<tr>
<td>Diameter feed [mm]</td>
<td>Water</td>
</tr>
<tr>
<td>Feedrate [mm/min]</td>
<td>200x(7.7)x7x(180.7)</td>
</tr>
<tr>
<td>[L_RGB] (1.26) GD guides and [L_RGB] (1.51) JD needles are standard equipment.</td>
<td></td>
</tr>
</tbody>
</table>
Safety Warning
To ensure proper use of the products listed in this catalog, please be sure to read the instruction manual prior to use.

Eco Changes is the Mitsubishi Electric Group’s environmental statement, and expresses the Group’s stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.

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